Space Weather Forecast

Issued on Tuesday, 13 June 2023 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: A slight chance of Moderate X-ray flares (R1-R2 radio blackouts) and isolated Minor (G1) Geomagnetic Storms during the period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with only common class flares observed. The six sunspot regions on the visible disc have generally been stable or declining with all regions small and relatively simple. No Earth-directed CMEs (coronal mass ejections) were observed in the last 24 hours, however a large filament eruption was observed from the northern polar area of the Sun and there are other filaments on the Earth-facing Sun that will be monitored for any eruption. These are lines of material held together by the Sun's magnetic field that can be released in the form of CMEs.

Solar Wind / Geomagnetic Activity: The solar wind showed an ongoing slightly-elevated environment. Solar wind speeds were around 420-470km/s. The magnetic field strength has been at weak levels, with the important north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low with a slight chance of rising to Moderate with isolated Moderate flares possible.

Solar Wind / Geomagnetic Activity: A CME associated with a moderate flare on the 9 June is directed mainly behind Earth but has the potential to give a glancing influence, most likely early day 1 (13 Jun). There are no other Earth-directed CMEs. Ongoing slightly elevated solar winds are expected day 1 (13 Jun), before easing day 2 (14 Jun). The next fast wind enhancement is expected to be into days 3 and 4 (15-16 Jun). Geomagnetic conditions are forecast to be mainly Quiet with Unsettled spells through the period. There is a slight chance of Active to G1 Minor Storm intervals early day 1 (13 Jun) from any CME glance that may occur. An increased chance of Active interval and a slight chance of G1 Minor Storms returns into days 3 and 4 (15-16 June) with solar wind speeds likely increasing.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to remain at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	1	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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